Introduction

The latest routine international evaluation for conformation traits took place as scheduled at the Interbull Centre. Data from twenty (22) countries were included in this evaluation.

International genetic evaluations for calving traits of bulls from Australia, Belgium, Canada, Switzerland, Czech Republic, Germany, Denmark-Finland-Sweden, Spain, France, United Kingdom, Hungary, Ireland, Italy, Japan, Korea, The Netherlands, Norway, New Zealand, Poland, South Africa, Estonia, Slovenia, Portugal and the United States of America were computed.
Holstein data were included in this evaluation.

CAN, DEU, DFS, FRA, GBR, ITA, NLD, POL, BEL, AUS and ESP contributed with GEBVs.

sta: CAN, DEU, DFS, FRA, GBR, ITA, NLD, POL, BEL, ESP
cwi: CAN, DEU, DFS, FRA, GBR, ITA, NLD, POL, BEL, ESP
bde: CAN, DEU, DFS, FRA, GBR, ITA, NLD, POL, BEL, ESP
ang: CAN, DEU, DFS, FRA, GBR, ITA, NLD, POL, BEL, ESP
ran: CAN, DEU, DFS, FRA, GBR, ITA, NLD, POL, BEL, ESP
rwi: CAN, DEU, DFS, FRA, GBR, ITA, NLD, POL, BEL, ESP
rls: CAN, DEU, DFS, FRA, GBR, ITA, NLD, POL, ESP, BEL
rlr: CAN, DEU, DFS, FRA, GBR, ITA, NLD, POL, ESP, BEL
fan: CAN, DEU, DFS, FRA, GBR, ITA, NLD, POL, BEL, ESP
fua: CAN, DEU, DFS, FRA, GBR, ITA, NLD, POL, BEL, ESP
ruh: CAN, DEU, DFS, FRA, GBR, ITA, NLD, POL, BEL, ESP
usu: CAN, DEU, DFS, FRA, GBR, ITA, NLD, POL, BEL, ESP
ude: CAN, DEU, DFS, FRA, GBR, ITA, NLD, POL, BEL, ESP
ftp: CAN, DEU, DFS, FRA, GBR, ITA, NLD, POL, BEL, ESP
ftl: CAN, DEU, DFS, FRA, GBR, ITA, NLD, POL, ESP, BEL
rtp: CAN, DEU, DFS, FRA, GBR, ITA, NLD, POL, BEL, ESP
ocs: CAN, DEU, FRA, GBR, ITA, NLD, POL, BEL, AUS, ESP
ous: CAN, DEU, DFS, FRA, GBR, ITA, NLD, POL, BEL, ESP
ofl: CAN, DEU, DFS, FRA, GBR, ITA, NLD, POL, BEL, ESP
loc: CAN, DEU, DFS, FRA, GBR, ITA, NLD, ESP, BEL
bcs: DEU, FRA, GBR, ITA, NLD

Changes in national procedures

Changes in the national genetic evaluation of conformation traits are as follows:

NOR RDC Change in model for OFL,OUS,UDE
The rolling definition of hys is causing the daughters to distribute somewhat differently over hys-classes at each evaluation. Therefore some bulls occasionally may lose EDC although the number of daughters stay the same. Reliability changes is a function of the EDC changes.

DEA BSW/SIM we have a continuous shift of the base group in each evaluation

DFS HOL/JER New parameters, new model, new editing
RDC

SVN ALL Changed time period for data inclusion, average cut was 4 years. Changed the definition of genetic reference base to year 2010.
Genetic parameters were recalculated for all breeds and traits. Changed herd to herd-year effect.
Performed cleaning data based on genomic parentage test as a consequence the pedigree changed for some animals.

DEU HOL/RDC Change data inclusion, model, parameters

ITA HOL Submitted locomotion as direct trait, and no more the indirect measure. Changes are also in the OFL and OCS trait, because loc has been included. In the OFL trait, substituted FAN with LOC.

NLD BSW/HOL Data edit for Angularity, which results in a decrease in
JER/RDC herds/daughters for older bulls.

INTERBULL CHANGES COMPARED TO THE DECEMBER ROUTINE RUN

No changes in Interbull procedures

DATA AND METHOD OF ANALYSIS

Data were national genetic evaluations of AI sampled bulls with at least 10 daughters or 10 EDC (for clinical mastitis and maternal calving traits at least 50 daughters or 50 EDC, and for direct calving traits at least 50 calvings or 50 EDC) in at least 10 herds. Table 1 presents the amount of data included in this Interbull evaluation for all breeds.

National proofs were first de-regressed within country and then analyzed jointly with a linear model including the effects of evaluation country, genetic group of bull and bull merit. Heritability estimates used in both the de-regression and international evaluation were as in each country's national evaluation.

Table 2 presents the date of evaluation as supplied by each country in the 01x-proof file.

Estimated genetic parameters and sire standard deviations are shown in APPENDIX I and the corresponding number of common bulls are listed in APPENDIX II.

SCIENTIFIC LITERATURE

The international genetic evaluation procedure is based on international work described in the following scientific publications:

International genetic evaluation computation:
- Schaeffer. 1994. J. Dairy Sci. 77:2671-2678
- Klei, 1998. Interbull Bulletin 17:3-7

Verification and Genetic trend validation:
- Klei et al., 2002. Interbull Bulletin 29:178-182.
- Boichard et al., 1995. J. Dairy Sci. 78:431-437

Weighting factors:
- Fikse and Banos, 2001. J. Dairy Sci. 84:1759-1767

De-regression:
- Sigurdsson and G. Banos. 1995. Acta Agric. Scand. 45:207-219
- Jairath et al. 1998. J. Dairy Sci. Vol. 81:550-562

Genetic parameter estimation:
- Klei and Weigel, 1998, Interbull Bulletin 17:8-14
- Sullivan, 1999. Interbull Bulletin 22:146-148

Post-processing of estimated genetic correlations:
- Mark et al., 2003, Interbull Bulletin 30:126-135
- Jorjani et al., 2003. J. Dairy Sci. 86:677-679
- https://wiki.interbull.org/public/rG%20procedure?action=print

Time edits
- Weigel and Banos. 1997. J. Dairy Sci. 80:3425-3430

International reliability estimation
- Harris and Johnson. 1998. Interbull Bulletin 17:31-36

NEXT ROUTINE INTERNATIONAL EVALUATION

The next routine evaluation of Interbull for production, conformation, udder health, longevity, calving, female fertility and workability traits is scheduled for April 2015. Deadline for sending data to the Interbull Centre is Tuesday November 18, 2014, 17:00 CET; confidential distribution of results is targeted for Wednesday November 26, 2014, with earliest possible official release of results on March 23, 2015. Please remark the three week turn around time.

NEXT TEST INTERNATIONAL EVALUATION

The next test run for production, conformation, udder health, longevity, calving, female fertility and workability traits will take place in February 2015. Countries planning to introduce changes in their national evaluation procedures and wishing to have them included in the routine Interbull evaluation, should have their data examined in this test run. New data and validation results should be sent to the Interbull Centre no later than February 3, 2015, 17:00 CET.

PUBLICATION OF INTERBULL ROUTINE RUN

Results were distributed by the Interbull Centre to designated representatives in each country. The international evaluation file comprised international proofs expressed on the base and unit of each country included in the analysis. Such records readily provide more information on bull performance in various countries, thereby minimising the need to resort to conversions.

At the same time, all recipients of Interbull results are expected to honour the agreed code of practice, decided by the Interbull Steering Committee, and only publish international evaluations on their own country scale. Evaluations expressed on another country scale are confidential and may only be used internally for research and review purposes.

Table 1. National evaluation dates in GMACE run Agust 2014

Country	Date
BEL	20141206
CAN	20141201
DEU	20141202
DFS	20141102
ESP	20141118
FRA	20141204
GBR	20141201
ITA	20141106
NLD	20141201
POL	20141027

Table 2.

Number of bulls in reference population for sta

BEL	1943.0									
CAN	637.0	23611.0								
DEU	758.0	1362.0	27573.0							
DFS	684.0	1102.0	24693.0	25447.0						
ESP	709.0	1181.0	24346.0	23713.0	25196.0					
FRA	773.0	1530.0	22615.0	21553.0	22362.0	27033.0				
GBR	592.0	22319.0	1213.0	967.0	1035.0	1354.0	22414.0			
ITA	599.0	21737.0	998.0	842.0	854.0	1102.0	21633.0	21992.0		
NLD	759.0	1351.0	24735.0	24624.0	23814.0	21859.0	1197.0	1051.0	26337.0	
POL	181.0	136.0	204.0	205.0	205.0	2561.0	132.0	137.0	214.0	2739.0

Number of bulls in reference population for cwi

BEL	1943.0									
CAN	637.0	23608.0								
DEU	757.0	1362.0	26362.0							
DFS	683.0	1102.0	23583.0	24320.0						
ESP	708.0	1181.0	23282.0	22705.0	24113.0					
FRA	772.0	1530.0	21503.0	20482.0	21326.0	25896.0				
GBR	592.0	22317.0	1213.0	967.0	1035.0	1354.0	22412.0			
ITA	599.0	21734.0	998.0	842.0	854.0	1102.0	21631.0	21989.0		
NLD	758.0	1351.0	23560.0	23520.0	22770.0	20753.0	1197.0	1051.0	25150.0	
POL	181.0	136.0	204.0	205.0	205.0	2561.0	132.0	137.0	214.0	2739.0

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Number of bulls in reference population for        bde
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BEL  1925.0
CAN   637.0 23611.0
DEU   758.0  1362.0 27015.0
DFS   684.0  1102.0 24184.0 24934.0
ESP   709.0  1181.0 23862.0 23248.0 24708.0
FRA   773.0  1530.0 22132.0 21087.0 21893.0 26548.0
GBR   592.0 22319.0  1213.0   967.0  1035.0  1354.0 22414.0
ITA   599.0 21737.0   998.0   842.0   854.0  1102.0 21633.0 21992.0
NLD   759.0  1351.0 24177.0 24113.0 23328.0 21374.0  1197.0  1051.0 25776.0
POL   181.0   136.0   204.0   205.0   205.0  2561.0   132.0   137.0   214.0  2739.0

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Number of bulls in reference population for        ang
-----------------------------------------------------
BEL  1850.0
CAN   632.0 23587.0
DEU   747.0  1359.0 23856.0
DFS   678.0  1099.0 21164.0 21889.0
ESP   702.0  1178.0 21242.0 20669.0 22059.0
FRA   766.0  1527.0 19416.0 18399.0 19304.0 23802.0
GBR   591.0 22310.0  1210.0   964.0  1032.0  1351.0 22405.0
ITA   597.0 21724.0   995.0   839.0   851.0  1099.0 21626.0 21978.0
NLD   736.0  1345.0 21062.0 21093.0 20719.0 18656.0  1193.0  1047.0 22392.0
POL   179.0   136.0   201.0   202.0   202.0  2558.0   132.0   137.0   211.0  2736.0

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Number of bulls in reference population for        ran
-----------------------------------------------------
BEL  1944.0
CAN   637.0 23611.0
DEU   758.0  1362.0 27465.0
DFS   684.0  1102.0 24585.0 25326.0
ESP   709.0  1181.0 24247.0 23603.0 25086.0
FRA   773.0  1530.0 22507.0 21434.0 22254.0 26914.0
GBR   592.0 22319.0  1213.0   967.0  1035.0  1354.0 22414.0
ITA   599.0 21737.0   998.0   842.0   854.0  1102.0 21633.0 21992.0
NLD   759.0  1351.0 24627.0 24505.0 23706.0 21740.0  1197.0  1051.0 26218.0
POL   181.0   136.0   204.0   205.0   205.0  2561.0   132.0   137.0   214.0  2739.0

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Number of bulls in reference population for        rwi
-----------------------------------------------------
BEL  1925.0
CAN   637.0 23611.0
DEU   758.0  1362.0 27520.0
DFS   684.0  1102.0 24640.0 25392.0
ESP   709.0  1181.0 24300.0 23665.0 25148.0
FRA   773.0  1530.0 22563.0 21499.0 22314.0 26979.0
GBR   592.0 22319.0  1213.0   967.0  1035.0  1354.0 22414.0
ITA   599.0 21737.0   998.0   842.0   854.0  1102.0 21633.0 21992.0
NLD   759.0  1351.0 24682.0 24569.0 23766.0 21805.0  1197.0  1051.0 26282.0
POL   181.0   136.0   204.0   205.0   205.0  2561.0   132.0   137.0   214.0  2739.0

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Number of bulls in reference population for        rls
-----------------------------------------------------
BEL  1944.0
CAN   637.0 23611.0
DEU   758.0  1362.0 27574.0
DFS   684.0  1102.0 24694.0 25448.0
ESP   709.0  1181.0 24346.0 23713.0 25196.0
FRA   773.0  1530.0 22616.0 21554.0 22362.0 27034.0
GBR   592.0 22319.0  1213.0   967.0  1035.0  1354.0 22414.0
ITA   599.0 21737.0   998.0   842.0   854.0  1102.0 21633.0 21992.0
NLD   759.0  1351.0 24736.0 24625.0 23814.0 21860.0  1197.0  1051.0 26338.0
POL   181.0   136.0   204.0   205.0   205.0  2561.0   132.0   137.0   214.0  2739.0
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Number of bulls in reference population for        rlr
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BEL  1913.0
CAN   635.0 22775.0
DEU   753.0  1355.0 25498.0
DFS   679.0  1095.0 22766.0 23491.0
ESP   704.0  1174.0 22514.0 21944.0 23333.0
FRA   768.0  1523.0 20710.0 19696.0 20564.0 25038.0
GBR   591.0 21500.0  1206.0   960.0  1028.0  1347.0 21594.0
ITA   598.0 20908.0   991.0   835.0   847.0  1095.0 20819.0 21156.0
NLD   739.0  1342.0 22724.0 22703.0 22009.0 19967.0  1189.0  1043.0 24069.0
POL   181.0   136.0   204.0   205.0   205.0  2549.0   132.0   137.0   214.0  2727.0

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Number of bulls in reference population for        fan
-----------------------------------------------------
BEL  1918.0
CAN   635.0 23607.0
DEU   756.0  1362.0 25392.0
DFS   682.0  1102.0 22879.0 23612.0
ESP   707.0  1181.0 22578.0 21990.0 23405.0
FRA   771.0  1530.0 20871.0 19860.0 20649.0 25280.0
GBR   591.0 22316.0  1213.0   967.0  1035.0  1354.0 22411.0
ITA   598.0 21736.0   998.0   842.0   854.0  1102.0 21632.0 21991.0
NLD   742.0  1349.0 22870.0 22853.0 22063.0 20122.0  1196.0  1050.0 24226.0
POL   180.0   136.0   203.0   204.0   204.0  2560.0   132.0   137.0   213.0  2738.0

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Number of bulls in reference population for        fua
-----------------------------------------------------
BEL  1944.0
CAN   637.0 23610.0
DEU   758.0  1362.0 26757.0
DFS   684.0  1102.0 23964.0 24709.0
ESP   709.0  1181.0 23632.0 23049.0 24472.0
FRA   773.0  1530.0 21885.0 20868.0 21670.0 26297.0
GBR   592.0 22319.0  1213.0   967.0  1035.0  1354.0 22414.0
ITA   599.0 21736.0   998.0   842.0   854.0  1102.0 21633.0 21991.0
NLD   759.0  1351.0 23938.0 23902.0 23113.0 21136.0  1197.0  1051.0 25535.0
POL   181.0   136.0   204.0   205.0   205.0  2561.0   132.0   137.0   214.0  2739.0

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Number of bulls in reference population for        ruh
-----------------------------------------------------
BEL  1944.0
CAN   637.0 23610.0
DEU   758.0  1362.0 26444.0
DFS   684.0  1102.0 23643.0 24351.0
ESP   709.0  1181.0 23312.0 22685.0 24113.0
FRA   773.0  1530.0 21575.0 20539.0 21341.0 25976.0
GBR   592.0 22318.0  1213.0   967.0  1035.0  1354.0 22413.0
ITA   599.0 21737.0   998.0   842.0   854.0  1102.0 21633.0 21992.0
NLD   759.0  1351.0 23616.0 23565.0 22773.0 20808.0  1197.0  1051.0 25200.0
POL   181.0   136.0   204.0   205.0   205.0  2561.0   132.0   137.0   214.0  2739.0

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Number of bulls in reference population for        usu
-----------------------------------------------------
BEL  1944.0
CAN   637.0 23611.0
DEU   758.0  1362.0 27572.0
DFS   684.0  1102.0 24692.0 25446.0
ESP   709.0  1181.0 24344.0 23711.0 25194.0
FRA   773.0  1530.0 22614.0 21552.0 22360.0 27032.0
GBR   592.0 22319.0  1213.0   967.0  1035.0  1354.0 22414.0
ITA   599.0 21737.0   998.0   842.0   854.0  1102.0 21633.0 21992.0
NLD   759.0  1351.0 24734.0 24623.0 23812.0 21858.0  1197.0  1051.0 26336.0
POL   181.0   136.0   204.0   205.0   205.0  2561.0   132.0   137.0   214.0  2739.0
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Number of bulls in reference population for        ude
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BEL  1924.0
CAN   635.0 23607.0
DEU   758.0  1362.0 27571.0
DFS   684.0  1102.0 24691.0 25445.0
ESP   709.0  1181.0 24343.0 23710.0 25193.0
FRA   773.0  1530.0 22614.0 21552.0 22360.0 27032.0
GBR   591.0 22316.0  1213.0   967.0  1035.0  1354.0 22411.0
ITA   598.0 21736.0   998.0   842.0   854.0  1102.0 21632.0 21991.0
NLD   744.0  1349.0 24733.0 24622.0 23811.0 21858.0  1196.0  1050.0 26101.0
POL   181.0   136.0   204.0   205.0   205.0  2561.0   132.0   137.0   214.0  2739.0

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Number of bulls in reference population for        ftp
-----------------------------------------------------
BEL  1944.0
CAN   637.0 23611.0
DEU   758.0  1362.0 27528.0
DFS   684.0  1102.0 24648.0 25400.0
ESP   709.0  1181.0 24307.0 23672.0 25155.0
FRA   773.0  1530.0 22570.0 21506.0 22321.0 26986.0
GBR   592.0 22319.0  1213.0   967.0  1035.0  1354.0 22414.0
ITA   599.0 21737.0   998.0   842.0   854.0  1102.0 21633.0 21992.0
NLD   759.0  1351.0 24690.0 24577.0 23773.0 21812.0  1197.0  1051.0 26290.0
POL   181.0   136.0   204.0   205.0   205.0  2561.0   132.0   137.0   214.0  2739.0

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Number of bulls in reference population for        ftl
-----------------------------------------------------
BEL  1924.0
CAN   635.0 23607.0
DEU   758.0  1362.0 27570.0
DFS   684.0  1102.0 24690.0 25444.0
ESP   709.0  1181.0 24343.0 23710.0 25193.0
FRA   773.0  1530.0 22613.0 21551.0 22360.0 27031.0
GBR   591.0 22316.0  1213.0   967.0  1035.0  1354.0 22411.0
ITA   598.0 21736.0   998.0   842.0   854.0  1102.0 21632.0 21991.0
NLD   744.0  1349.0 24732.0 24621.0 23811.0 21857.0  1196.0  1050.0 26100.0
POL   181.0   136.0   204.0   205.0   205.0  2561.0   132.0   137.0   214.0  2739.0

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Number of bulls in reference population for        rtp
-----------------------------------------------------
BEL  1879.0
CAN   634.0 21632.0
DEU   751.0  1355.0 25474.0
DFS   681.0  1095.0 22744.0 23445.0
ESP   706.0  1175.0 22463.0 21822.0 23258.0
FRA   770.0  1523.0 20780.0 19731.0 20521.0 24832.0
GBR   592.0 20384.0  1206.0   960.0  1029.0  1347.0 20477.0
ITA   598.0 19806.0   992.0   836.0   848.0  1096.0 19711.0 20029.0
NLD   755.0  1327.0 22672.0 22654.0 21908.0 20001.0  1173.0  1028.0 24096.0
POL   180.0   136.0   204.0   205.0   205.0  2261.0   132.0   137.0   214.0  2426.0

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Number of bulls in reference population for        ocs
-----------------------------------------------------
AUS  2132.0
BEL   227.0  1924.0
CAN   422.0   637.0 23601.0
DEU   365.0   757.0  1362.0 26944.0
ESP   360.0   708.0  1181.0 23789.0 24625.0
FRA   379.0   772.0  1530.0 22008.0 21818.0 26410.0
GBR   407.0   592.0 22309.0  1213.0  1035.0  1354.0 22404.0
ITA   307.0   599.0 21727.0   998.0   854.0  1102.0 21623.0 21982.0
NLD   475.0   758.0  1351.0 24142.0 23279.0 21260.0  1197.0  1051.0 25732.0
POL   107.0   181.0   136.0   204.0   205.0  2561.0   132.0   137.0   214.0  2739.0
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Number of bulls in reference population for        ous
-----------------------------------------------------
BEL  1921.0
CAN   637.0 23610.0
DEU   758.0  1362.0 27574.0
DFS   684.0  1102.0 24694.0 25448.0
ESP   709.0  1181.0 24346.0 23713.0 25196.0
FRA   773.0  1530.0 22616.0 21554.0 22362.0 27034.0
GBR   592.0 22318.0  1213.0   967.0  1035.0  1354.0 22413.0
ITA   599.0 21737.0   998.0   842.0   854.0  1102.0 21633.0 21992.0
NLD   759.0  1351.0 24736.0 24625.0 23814.0 21860.0  1197.0  1051.0 26338.0
POL   181.0   136.0   204.0   205.0   205.0  2561.0   132.0   137.0   214.0  2739.0

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Number of bulls in reference population for        ofl
-----------------------------------------------------
BEL  1900.0
CAN   635.0 23483.0
DEU   757.0  1362.0 26940.0
DFS   683.0  1102.0 24110.0 24852.0
ESP   708.0  1181.0 23785.0 23188.0 24621.0
FRA   772.0  1530.0 22005.0 20965.0 21815.0 26393.0
GBR   591.0 22192.0  1213.0   967.0  1035.0  1354.0 22287.0
ITA   598.0 21614.0   998.0   842.0   854.0  1102.0 21510.0 21862.0
NLD   743.0  1349.0 24138.0 24049.0 23275.0 21257.0  1196.0  1050.0 25473.0
POL   181.0   136.0   204.0   205.0   205.0  2561.0   132.0   137.0   214.0  2739.0

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Number of bulls in reference population for        loc
-----------------------------------------------------
BEL  1836.0
CAN   630.0 20709.0
DEU   747.0  1341.0 24130.0
DFS   678.0  1084.0 21710.0 22437.0
ESP   702.0  1162.0 21510.0 20964.0 22321.0
FRA   766.0  1506.0 19753.0 18775.0 19597.0 21417.0
GBR   589.0 19461.0  1192.0   949.0  1016.0  1330.0 19555.0
ITA   593.0 18997.0   979.0   825.0   836.0  1084.0 18919.0 19209.0
NLD   735.0  1328.0 21597.0 21659.0 20995.0 19010.0  1176.0  1031.0 22898.0

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Number of bulls in reference population for        bcs
-----------------------------------------------------
DEU 21347.0
FRA 16957.0 18377.0
GBR  1180.0  1319.0 18080.0
ITA   967.0  1073.0 17452.0 17735.0
NLD 18881.0 16182.0  1158.0  1013.0 20084.0
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